

- I. Project title: Propagation Facilities, in the Grand Valley (24 Road Hatchery, Horsethief Ponds, and grow-out ponds), for Captive Rearing of Endangered Fishes for the Upper Colorado River Basin.

II. Principal Investigators(s):

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- III. Captive rearing of endangered fish for the Upper Colorado River Basin began in the Grand Valley in 1992 with construction of the Horsethief Ponds. The Horsethief Ponds were built to maintain broodstock populations of endangered fish for the upper Colorado Recovery Program. Additional propagation facilities were needed to rear young fish, therefore in 1996 the 24 Road Hatchery was constructed inside of an existing warehouse (owned by the Bureau of Reclamation) at 1149 24 Road, Grand Junction, CO. The Hatchery was expanded in 1999, and now contains two separate water re-use systems. In addition to the hatchery expansion, eight ponds are being used to grow razorback suckers for stocking into the Colorado and Gunnison rivers.

- IV. Study Schedule: 1999

- V. Relationship to RIPRAP: General Recovery Program Support Action Plan

- IV.A Genetic Management
  - IV.A.1. Augment razorback sucker
  - IV.A.4. Secure and manage genetic stocks in refugia
- IV.C Operate and maintain facilities

- VI. Accomplishment of FY 99 Tasks and Deliverables, Discussion of Initial findings and Shortcomings:

In April of 1999, 27,768 one-year-old razorback suckers from the 24 Road Hatchery were

stocked into seven ponds for further grow out. In addition, 1,050 1998 year-class razorbacks from Willow Beach NFH, and 20,040 1999 razorback fry from Lake Mojave, were stocked into Bounds Pond for grow out on April 22, 1999. An additional 20,000 fry from the 1999 year-class were stocked into two ponds in May of 1999.

In April and May of 1999, razorback broodstock held at Horsethief Ponds were spawned and the eggs transferred to the 24 Road Hatchery. A total of 28 family lots were produced. Hatching success varied from 1% to 90%. Approximately 250,000 fish were hatched from the 28 lots. In mid-July, Colorado pikeminnow were collected from the Colorado River and were taken to Horsethief for spawning. These fish were spawned and two family lots of eggs were produced and transferred to the 24 Road Hatchery. Approximately 2000 pikeminnow are being reared at the hatchery.

During May and June of 1999, 112,000 razorback sucker fry from the 1999 spawning were stocked or transferred to other facilities. On May 11, 1999, 10,000 fry, representing two lots, were sent to the Bozeman Fish Technology Center for feed studies being conducted by Rick Barrows. On May 17, 1999, 2,000 fry, representing one lot, as well as 187 flannel-mouth sucker fry also hatched at the hatchery, were transported to Dan Byers at Colorado State University for selenium studies. On May 25, 1999, 30,000 fry, representing twelve family lots, were stocked for grow out into West Avocet Pond, near Farmington, NM. On May 27, 1999, 10,000 razorback fry, representing one lot, were stocked for grow out into Clymers Pond in Grand Junction, CO. Also on May 27, 10,000 fry, representing one lot, were stocked for grow out into Dike Road Pond in Grand Junction, CO. On June 3, 1999, 50,000 fry, representing 5 lots were transported to the University of Utah, in Salt Lake City, Utah, for nonnative predation studies being conducted by Todd Crowl.

As of November 22, 1999, approximately 140,000 razorback suckers (representing 28 family lots) and 2,000 Colorado pikeminnow (representing two family lots) are being reared at the 24 Road Hatchery.

Three species of endangered fish were held at Horsethief Ponds during FY 99:

Colorado pikeminnow

56 1991 year-class representing 17 family lots

Razorback suckers

8 adult broodstock captured in the Grand Valley, the Colorado and San Juan arms of Lake Powell, and Etter's Pond  
6 wild adults from the Green River  
113 1992 year-class, F1's from original broodstock  
40 1994 year-class, F1's from original broodstock  
30 1991 year-class from Green River broodstock

15	1995 year-class from Green River broodstock
215	1995 year-class, F1's from original broodstock
5	1996 year-class, F1's and F2's from original broodstock
71	1997 year-class, F1's and F2's from original broodstock
195	1998 year-class, F1's and F2's from original broodstock

humpback chubs

4 F1's held in refugia

Colorado's five year stocking plan calls for numbers of fish that ramp up to the greatest numbers in the third year of the plan and then ramp down to lesser numbers in the next two years. In the third year the plan calls for 592,000 fish that would weigh 237,000 lbs. To raise fish in these numbers and weights would take approximately 600 acres of ponds. At the present time there are approximately 19 acres of ponds available for use. These ponds were stocked with razorback suckers in the spring of 1999 and harvested in the fall with varying results. It should be noted that harvest in various ponds was started earlier in the year than optimal because of limitations imposed by the lack of man power to PIT tag a lot of fish during the end of the growing season. Where a pond was harvested early, size selective trap nets were used so only larger fish would be trapped. Following are the individual pond results:

Clymers Pond -a five-acre pond with a small area of eight foot maximum depth.

The top five feet of water can be drained to the river and is sloped to a point where the rest of the water can be pumped out. Before the pond is refilled, all nonnative fish can be eliminated , however some get re-introduced via irrigation water from the Redlands Canal.

This year, 7,973, two to four inch fish and 10,000 razorback sucker fry were stocked in Clymers Pond. Test netting during the summer produced more nonnative fish than razorback suckers. Green sunfish were the most abundant species followed by black bullheads. The pond was also heavily infested with bullfrogs. When the fish were harvested this fall, there were 791 fish (9.92% of the two to four inch fish stocked) removed. None of the stocked fry were found. Survival was low but growth was good, remaining fish averaged 210mm in length and weighed 100 grams. The green sunfish and bullfrog tadpoles were not enumerated but estimated at 1000 plus pounds. Poor survival was undoubtedly due to predation.

Dike Road Pond - a two and one-half acre pond with maximum six foot depth, leased from the City of Grand Junction for five years

The pond was rotenoned in December 1998 to eliminate nonnative fish. There were 9,521, two to four inch fish stocked into Dike Road Pond April, 19, 1999 along with 10,000 fry on May 27. This pond was very sterile into early summer so some water from a fertile pond was

hauled into Dike Road Pond and super phosphate fertilizer was added to the pond at a rate of 5 lbs. per acre. Test netting in August resulted in a fairly large number of fish, so fish removal commenced in early September. There was a total of 1,288 fish collected (13.5% of larger fish stocked) that averaged 180mm in length and 55 grams in weight. When smaller mesh nets were set several hundred two to three inch fish were caught. As there is no way to completely harvest this pond there will be some large fish caught whenever it is netted. Because of the large number of fry that survived not many fish should be stocked into this pond in 2000. There were a few 1-inch carp trapped which indicated that the pond reclamation was not 100% successful.

26 Road Pond - Colorado State Parks is letting us use this pond under an informal agreement. The pond is about two surface acres and has a normal depth of about four feet but gets deeper when the river level is higher.

This pond was rotenoned in December 1998 and stocked with 6,907 2- to 4-inch razorback suckers on April 13, 1999. The river and the pond were fairly high for most of the summer but in August when the water level went down the pond became weed choked. Fish removal began August 3, 1999 using size selective traps. 1,636 fish averaging 180mm in length and 55 grams in weight were removed from August 3-10. During the week starting September 20, 1,539 fish averaging 170mm in length and 45 grams in weight were removed from the pond. On October 25-26 another 707 fish averaging 175mm in length and 52 grams in weight were removed. In all 3,880 fish (56.2% of fish stocked) were harvested. But, since the pond was not drained additional fish remain which will be harvested next year, and we should be able to stock additional fingerlings into this pond in the spring of 2000.

Bounds Pond - the pond (acquired by the Recovery Implementation Program) is approximately seven surface acres and has some areas of fifteen feet depth.

This pond was not reclaimed before stocking but a 2-week effort trapping nonnatives from the pond removed several bass, bluegill, sunfish and carp. On April 21, 1999, razorback suckers from Willow Beach NFH were stocked in the pond. There were 20,000 advanced fry and 1,000 3-4 inch fish stocked. The pond had very good plankton growth throughout the summer, but limited test netting did not yield any razorback suckers. It is our intention to harvest this pond in the fall of 2000. Meanwhile, more test netting will be done to determine if there is any survival or more stocking to be required.

Highline Ponds - these four ponds of about a half acre each belong to Colorado State Parks and are being used under an informal agreement with State Parks. The ponds have shallow sides with a six to eight foot depression in the center.

On April 20, 1999, 3032, 2- to 4-inch razorback suckers were stocked in these ponds. During the week of September 24, 1999 241 fish were removed. The best pond also

contained the most weeds, making one surmise that the weeds provided cover from bird predation. These ponds were stocked almost immediately after filling and may have suffered from lack of food.

- VII. Recommendations: Continue management and operation of facilities to serve as a primary refuge for endangered fishes of the Upper Colorado River. Continue to acquire agreements/easements to use private ponds for the culture of razorback suckers. Survival and growth of razorbacks varies from pond to pond, however it is a cost effective way to rear fish and we are learning as we go. Ponds with aquatic vegetation seem to produce more fish; eliminating competition and predation from nonnatives is a must. Trapping is an effective way to harvest the fish.
  
- VIII. Project Status: Project is ongoing and on track
  
- IX. FY Budget:
  - A. Funds Provided: \$189,000
  - B. Funds Expended: \$189,000
  - C. Difference \$ 0
  - D. Publication charges \$ 0
  
- X. Status of Data submission: All PIT tag information has been submitted to the database manager.
  
- XI. Signed: Frank K. Pfeifer